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# (12) UK Patent Application (19) GB (11) 2 074 853 A

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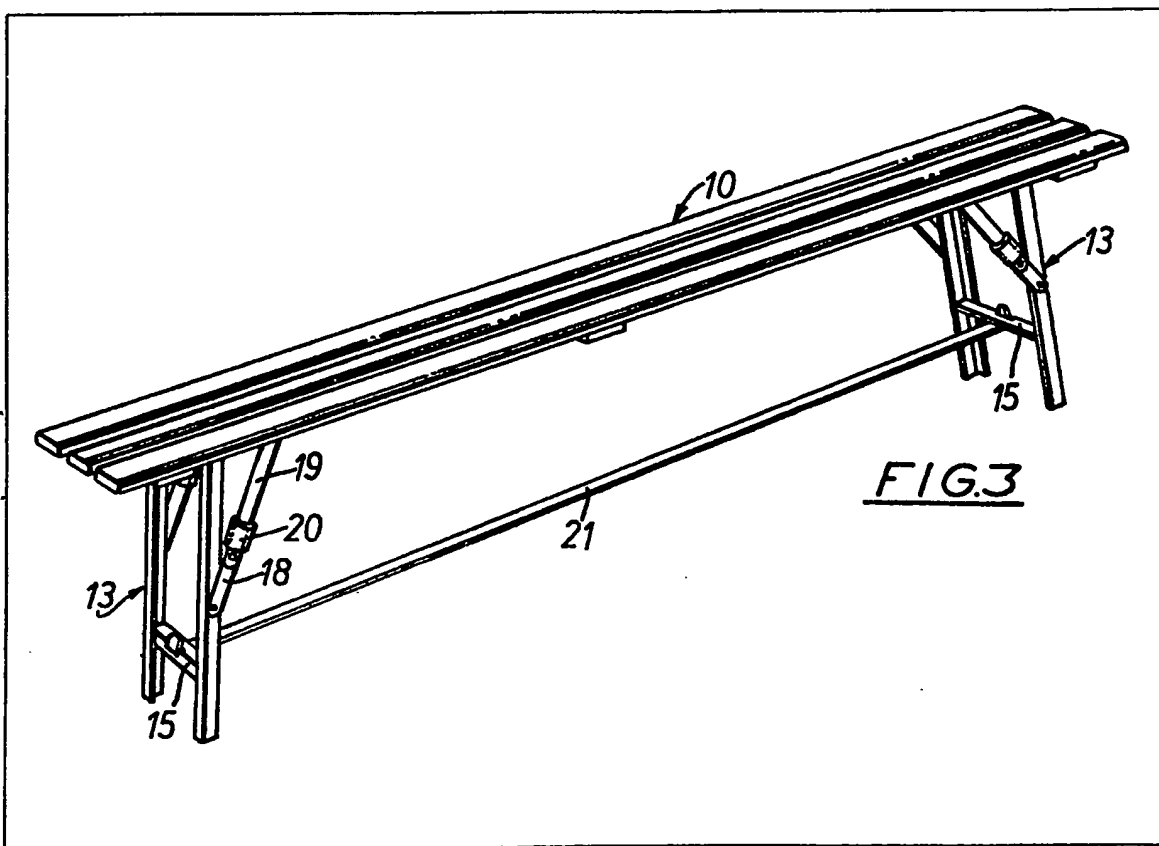
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## (54) Articles of furniture

(57) A bench seat comprises a slatted wooden seat portion 10 having adjacent opposite ends thereof metal legs 13 pivotally mounted on the seat portion so that they may be swung between a folded position, where they lie along the seat portion, and an extended position where they extend away from the seat portion. A tension member 21 extends between the legs

13 to prevent them splaying under load. As shown it is a strut. Its ends are slideable through slots 23 in cross bars 15 of the legs, the slots being so shaped as to permit the swinging movement of the legs between the folded and extended positions. Bent-over ends 22 of the tension member 21 act as stops to limit outward deflection of the legs. The tension member may be flexible (i.e. a rope or like).



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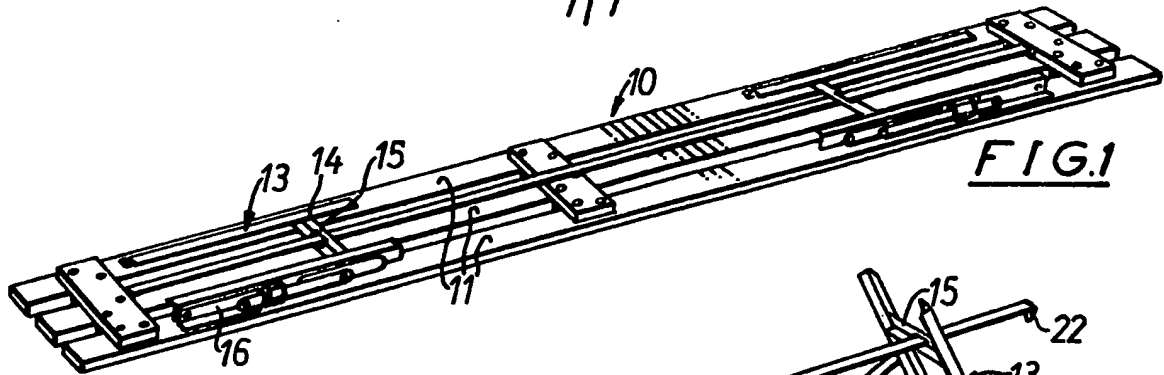


FIG. 1

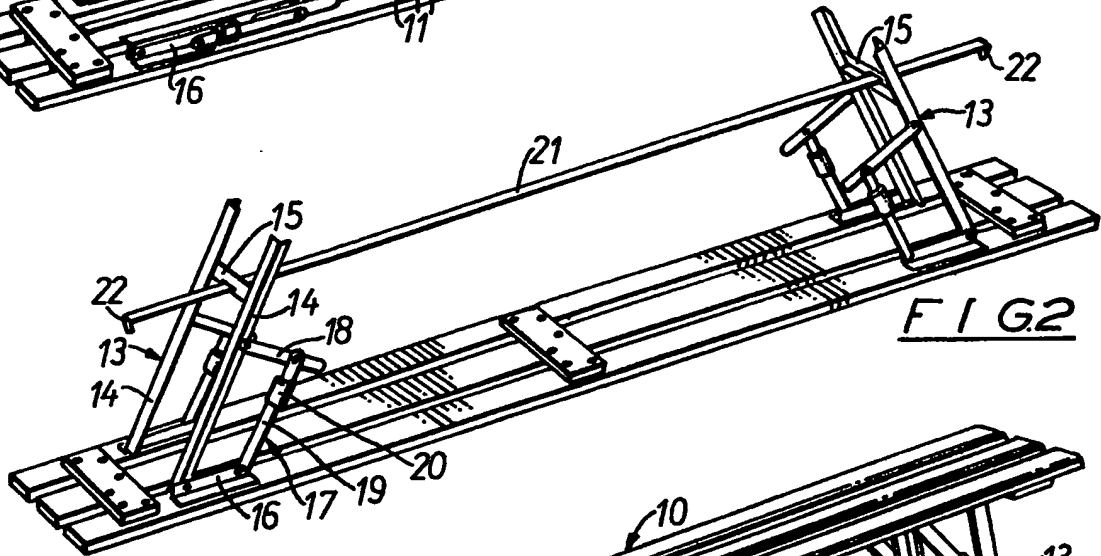


FIG. 2

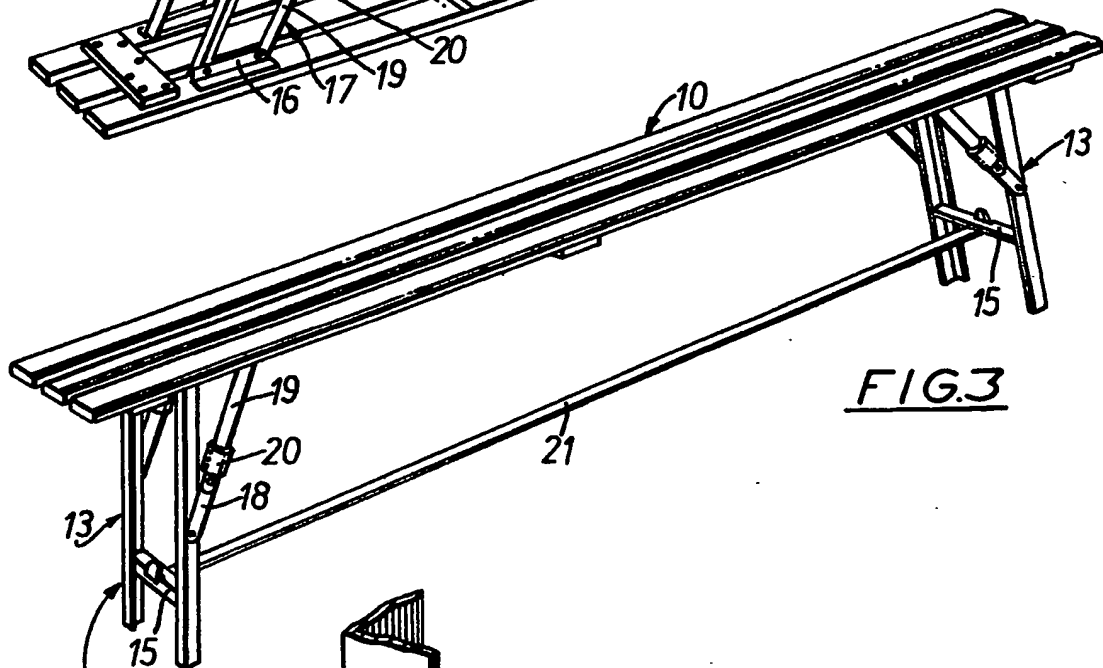


FIG. 3

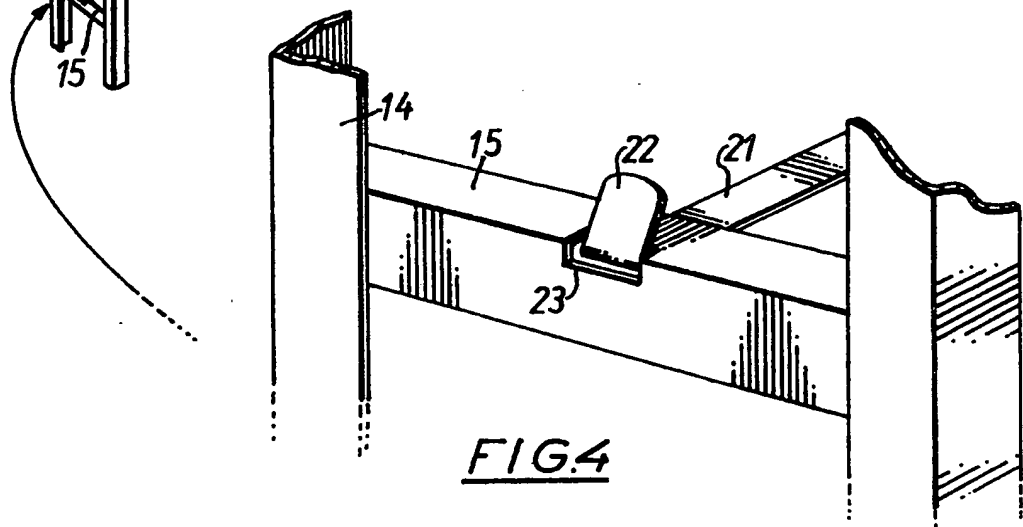


FIG. 4

# SPECIFICATION Articles of furniture

The invention relates to articles of furniture, such as bench seats, of the kind comprising a flat upper portion having adjacent each end thereof a leg structure pivotally mounted on the upper portion so that the leg structures may be swung between a folded position, where they lie along the upper portion, and an extended position where they extend away from the upper portion to form the legs of the article, means being provided to retain the leg structures in the extended position.

In bench seats of this kind the elongate seat portion may tend to bow downwardly when the seat is in use and, during such use, the extent of bowing of the seat portion may vary as more or less weight is put on it. This variable bowing of the seat portion is accompanied by corresponding movement of the lower ends of the leg structures towards and away from one another. Such movement may cause damage to the floor surface on which the bench seat is standing, and may also cause the seat to "walk" from its required position.

In an effort to overcome this problem it has been proposed that bowing of the seat portion be reduced by rendering the seat portion more rigid, for example by providing downwardly extending flanges along its longitudinal side edges. However such a solution adds significantly to the cost of the bench seat and the present invention sets out to provide an alternative and cheaper solution to the problem.

According to the invention there is provided an article of furniture of the kind first referred to, wherein a tension member is connected between parts of the leg structures spaced from their pivotal connections to the upper portion in a manner to permit the required swinging movement of the leg structures between said folded and extended positions, the length of the tension member being such that it is put in tension when the leg structures are in their extended positions and the article is in use. Thus, the tension member prevents the lower ends of the leg structures moving away from one another when the article is in use, and thereby prevents corresponding damage to the floor surface.

The tension member may comprise a flexible element the ends of which are connected to the leg structures respectively. Preferably, however, the tension member is an elongate comparatively rigid element connected to the leg structures in a manner to permit folding thereof while the tension member is connected thereto. For example, at least one end of the tension member may be slideable relatively to its associated leg structure, reaching a limiting position relatively thereto when the leg structures reach their extended position relatively to the upper portion. Preferably both ends of the tension member are slideable relatively to their associated leg structures.

The following is a more detailed description of an embodiment of the invention, reference being made to the accompanying drawings in which:

Figure 1 is a perspective view of an inverted bench seat with its leg structures shown in the folded position,

Figure 2 is a similar view of Figure 1, showing the leg structures in a partly extended position,

Figure 3 is a perspective view of the bench seat, in an upright position, with the leg structures fully extended, and

Figure 4 is a partial perspective view, on an enlarged scale, showing the engagement between the longitudinal tension member and a leg structure.

The seat portion 10 of the bench seat comprises three spaced parallel elongate wooden slats 11 connected together by three spaced cross bars 12 screwed to the underside thereof. Folding leg structures 13 are pivotally mounted a short distance from each end of the seat portion 10, on the underside thereof.

Each leg structure 13 comprises two spaced metal legs 14 of angle-section connected by an angle-section cross bar 15. The upper ends of the legs 14 are pivotally connected to brackets 16 mounted on the underside of the seat portion. A collapsible holding strut 17 is pivotally connected between each bracket 16 and the associated leg 14. The holding strut 17 comprises two overlapping links 18 and 19 pivotally connected together, a collar 20 being slideable to embrace the overlapping portions of the links to hold the strut rigid when the leg structures are in the extended position shown in Figure 3. When it is wished to swing the leg structures to the folding position shown in Figure 1, the collar 20 is slid clear of the overlapping portions of the links 18 and 19 so that the strut 17 can collapse, as shown in Figure 2.

Resilient caps (not shown) may be fitted over the lower ends of the legs 14.

Extending between the cross bars 15 of the leg structures is a rigid metal tension member 21, of flat rectangular cross-section, the opposite ends of which pass through slots 23 in the middle of the cross members 15. At each end of the tension member 21 there is formed a stop portion 22 which is bent upwardly to extend at an angle to the main length of the member. This limits the swinging movement of the leg structures 13 away from one another when the bench is in use. The portions 22 and the slots 23 are preferably so shaped that the angled portions 22, although providing stops, can be withdrawn through the slots 23 so that the tension member 21 can be removed completely if desired. In an alternative arrangement, not shown, the stop may be provided by a short stack of washers or other packing pieces secured to the end of the tension member 21 by a rivet. The length of the tension member 21 and distance apart of the stop portions 22 is such that the cross bars 15 engage the stop portions when the leg structures are in the extended position shown in Figure 3 and the bench is ready for use. Upon application of varying loads to the bench the lower ends of the leg structures are prevented from moving away from

one another by the tension member 21.

The slot 22 in each cross bar 15 through which the end of the tension member 21 passes is formed partly in one flange of the angle-section cross bar and partly in the other flange. The dimensions of the slot are such that as the leg structures 13 are folded upwardly to lie against the seat portion in the position shown in Figure 1, the cross bars 15 can slide relatively to the tension member 21 which, in the folded position, lies along and beneath the seat portion.

Although it is preferred that the tension member should be a comparatively rigid element as described, it will be appreciated that a similar effect may be obtained by connecting the ends of a flexible but inextensible element between the leg structures, the flexibility of such element permitting the movement of the leg structures to the folded position.

Although the invention has been described in particular relation to bench seats, it will be appreciated that the arrangement of folding leg structures and tension member according to the invention is also applicable to other articles of furniture having an upper portion supported on legs, such as tables, workbenches, chair and stools.

#### CLAIMS

1. An article of furniture comprising a flat upper portion having adjacent each end thereof a leg structure pivotally mounted on the upper portion so that the leg structures may be swung between a folded position, where they lie along the upper portion, and an extended position where they extend away from the upper portion to form the legs of the article, and a tension member connected between parts of the leg structures spaced from their pivotal connections to the upper portion in a manner to permit the required swinging movement of the leg structures between said folded and extended positions, the length of the tension member being such that it is put in

tension when the leg structures are in their extended positions and the article is in use.

2. An article of furniture according to claim 1, wherein the tension member comprises a flexible element the end of which are connected to the leg structures respectively.
3. An article of furniture according to claim 1, wherein the tension member is an elongate comparatively rigid element connected to the leg structures in a manner to permit folding thereof while the tension member is connected thereto.
4. An article of furniture according to claim 3, wherein at least one end of the tension member is slideable relatively to its associated leg structure, reaching a limiting position relatively thereto when the leg structures reach their extended position relative to the upper portion.
5. An article of furniture according to claim 4, wherein both ends of the tension member are slideable relatively to their respective associated leg structures.
6. An article of furniture according to claim 4 or claim 5, wherein said end, or each said end, of the tension member is slideable through an aperture in the associated leg structure, said aperture being shaped to permit the required relative angular movement between the leg structure and tension member as the leg structure is swung between its folded and extended positions.
7. An article of furniture according to any of claims 4 to 6, wherein the limiting position of one or each end of the tension member relative to its associated leg structure is provided by an abutment of the tension member which is engageable with the leg structure in the extended position thereof.
8. An article of furniture according to claim 7, wherein said abutment comprises a bent end portion of the tension member.
9. An article of furniture substantially as hereinbefore described with reference to the accompanying drawings.

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ABSTRACT:

A bench seat comprises a slatted wooden  
seat portion 10 having adjacent

opposite ends thereof metal legs 13 pivotally mounted on the seat portion so that they may be swung between a folded position, where they lie along the seat portion, and an extended position where they extend away from the seat portion. A tension member 21 extends between the legs 13 to prevent them splaying under load. As shown it is a strut. Its ends are slideable through slots 23 in cross bars 15 of the legs, the slots being so shaped as to permit the swinging movement of the legs between the folded and extended positions. Bent- over ends 22 of the tension member 21 act as stops to limit outward deflection of the legs. The tension member may be flexible (i.e. a rope or like). <IMAGE>